

What is claimed is:

[Claim 1] 1. An apparatus, comprising:

a component adapted to be positioned in a subterranean wellbore, said component having a recess formed therein;
a detachable sealed housing removably coupled to said component, at least a portion of said detachable sealed housing being positioned in said recess, said detachable sealed housing having at least one cavity formed therein; and
at least one device positioned in said cavity.

[Claim 2] 2. The apparatus of claim 1, wherein said at least one device is comprised of a sensor.

[Claim 3] 3. The apparatus of claim 1, wherein said at least one device is comprised of an electrical component.

[Claim 4] 4. The apparatus of claim 1, wherein said at least one device is comprised of at least one sensor and at least one electrical component.

[Claim 5] 5. The apparatus of claim 1, wherein substantially all of said detachable sealed housing is positioned in said recess.

[Claim 6] 6. The apparatus of claim 1, wherein said detachable sealed housing is threadingly coupled to said recess.

[Claim 7] 7. The apparatus of claim 1, wherein said detachable sealed housing is removably coupled to said housing by a split ring.

[Claim 8] 8. The apparatus of claim 1, further comprising a threaded retaining member that is threadingly coupled to said component, said threaded retaining member adapted to engage at least a portion of said detachable sealed housing to secure said portion of said detachable sealed housing in said recess.

[Claim 9] 9. The apparatus of claim 1, further comprising a cover plate positioned over said detachable sealed housing, said cover plate being removably coupled to said component by at least one threaded fastener.

[Claim 10] 10. The apparatus of claim 1, wherein said housing has a plurality of cavities formed therein.

[Claim 11] 11. The apparatus of claim 10, wherein at least one sensor is positioned in each of said plurality of cavities.

[Claim 12] 12. The apparatus of claim 10, wherein at least one electrical component is positioned in each of said cavities.

[Claim 13] 13. The apparatus of claim 10, wherein at least one sensor and at least one electrical component is positioned in each of said plurality of cavities.

[Claim 14] 14. The apparatus of claim 1, wherein said recess is formed in an exterior surface of said component.

[Claim 15] 15. The apparatus of claim 1, wherein said detachable sealed housing comprises;

a body;
a cover plate coupled to said body; and
a seal positioned between said body and said cover plate.

[Claim 16] 16. The apparatus of claim 1, wherein said detachable sealed housing has at least one of a generally cylindrical configuration and a generally rectangular configuration.

[Claim 17] 17. The apparatus of claim 1, wherein said detachable sealed housing has a configuration of a partial ring segment.

[Claim 18] 18. The apparatus of claim 1, wherein said detachable sealed housing is coupled to said component by at least one hinged connection.

[Claim 19] 19. The apparatus of claim 1, further comprising at least one passageway extending from said at least one cavity to an external surface of said detachable sealed housing.

[Claim 20] 20. The apparatus of claim 10, further comprising an internal passageway formed in said detachable sealed housing that connects at least two of said plurality of cavities to one another.

[Claim 21] 21. The apparatus of claim 2, wherein said at least one sensor is comprised of at least one of a thermometer, a gyroscope, an accelerometer, a strain gauge, a barometer, a pressure sensor, a pH sensor, an oxygen sensor, a NO_x, a carbon monoxide sensor, and a hall effect switch.

[Claim 22] 22. The apparatus of claim 3, wherein said at least one electrical component comprises at least one of a battery, a microprocessor, a

wireless transmitter, a wireless receiver, a circuit board, an analog-to-digital converter, a communications port and a memory chip.

[Claim 23] 23. The apparatus of claim 1, wherein said component comprises at least one of a drill bit, a pipe, a motor, a rotary steerable device, and a downhole sub.

[Claim 24] 24. The apparatus of claim 1, further comprising at least one indicator light coupled to said detachable sealed housing.

[Claim 25] 25. The apparatus of claim 1, further comprising at least one display panel coupled to said detachable sealed housing.

[Claim 26] 26. The apparatus of claim 1, wherein at least a portion of said detachable sealed housing defines a nozzle that is coupled to a drill bit.

[Claim 27] 27. The apparatus of claim 1, wherein said device is operatively coupled to a sensor positioned within an opening defined in said component or another component.

[Claim 28] 28. An apparatus, comprising:
a component adapted to be positioned in a subterranean wellbore, said component having a recess formed therein;
a detachable sealed housing threadingly coupled to said component, at least a portion of said detachable sealed housing being positioned in said recess, said detachable sealed housing having at least one cavity formed therein; and
at least one of a sensor and an electrical component positioned in said cavity.

[Claim 29] 29. The apparatus of claim 28, further comprising a cover plate positioned over said detachable sealed housing, said cover plate being removably coupled to said component by at least one threaded fastener.

[Claim 30] 30. The apparatus of claim 28, wherein said detachable sealed housing comprises;

a body;

a cover plate coupled to said body; and

a seal positioned between said body and said cover plate.

[Claim 31] 31. The apparatus of claim 28, wherein said detachable sealed housing has a plurality of cavities formed therein.

[Claim 32] 32. The apparatus of claim 31, wherein at least one sensor is positioned in each of said plurality of cavities.

[Claim 33] 33. The apparatus of claim 31, wherein at least one electrical component is positioned in each of said cavities.

[Claim 34] 34. The apparatus of claim 31, wherein at least one sensor and at least one electrical component is positioned in each of said plurality of cavities.

[Claim 35] 35. The apparatus of claim 28, further comprising at least one passageway extending from said at least one cavity to an external surface of said detachable sealed housing.

[Claim 36] 36. The apparatus of claim 31, further comprising an internal passageway formed in said housing that connects at least two of said plurality of cavities to one another.

[Claim 37] 37. The apparatus of claim 28, further comprising at least one indicator light coupled to said detachable detachable sealed housing.

[Claim 38] 38. The apparatus of claim 28, further comprising at least one display panel coupled to said detachable detachable sealed housing.

[Claim 39] 39. The apparatus of claim 28, wherein at least a portion of said detachable sealed housing defines a nozzle that is coupled to a drill bit.

[Claim 40] 40. The apparatus of claim 28, wherein said device is operatively coupled to a sensor positioned within an opening defined in said component or another component.

[Claim 41] 41. An apparatus, comprising:
a component adapted to be positioned in a subterranean wellbore, said component having a surface;
a detachable sealed housing removably coupled to said surface of said component, said housing having at least one cavity formed therein; and
at least one device positioned in said cavity.

[Claim 42] 42. The apparatus of claim 41, wherein said at least one device is comprised of a sensor.

[Claim 43] 43. The apparatus of claim 41, wherein said at least one device is comprised of an electrical component.

[Claim 44] 44. The apparatus of claim 41, wherein said at least one device is comprised of at least one sensor and at least one electrical component.

[Claim 45] 45. The apparatus of claim 41, wherein said detachable sealed housing is threadingly coupled to said surface of said component by at least one threaded fastener.

[Claim 46] 46. The apparatus of claim 41, wherein said surface of said component is an exterior surface.

[Claim 47] 47. The apparatus of claim 41, wherein said detachable sealed housing comprises;

a body;

a cover plate coupled to said body; and

a seal positioned between said body and said cover plate.

[Claim 48] 48. The apparatus of claim 41, wherein said surface is an exterior cylindrical surface.

[Claim 49] 49. The apparatus of claim 41, wherein said detachable sealed housing has a plurality of cavities formed therein.

[Claim 50] 50. The apparatus of claim 49, wherein at least one sensor and at least one electrical component is positioned in each of said plurality of cavities.

[Claim 51] 51. The apparatus of claim 41, further comprising at least one indicator light coupled to said detachable sealed housing.

[Claim 52] 52. The apparatus of claim 41, further comprising at least one display panel coupled to said detachable sealed housing.

[Claim 53] 53. A method, comprising:

positioning a detachable sealed housing at least partially in a recess formed in a component adapted to be positioned in a subterranean wellbore;
removably coupling said detachable sealed housing to said component wherein at least a portion of said detachable sealed housing is positioned in said recess formed in said component, said detachable sealed housing having at least one cavity formed therein and at least one device positioned within said at least one cavity;
positioning said component and said housing in said subterranean wellbore;
and
acquiring data using said at least one device after said detachable sealed housing is positioned within said subterranean wellbore.

[Claim 54] 54. The method of claim 53, wherein substantially all of said detachable sealed housing is positioned within said recess.

[Claim 55] 55. The method of claim 53, wherein said at least one device is comprised of a sensor.

[Claim 56] 56. The method of claim 53, wherein said at least one device is comprised of an electrical component.

[Claim 57] 57. The method of claim 53, wherein said at least one device is comprised of at least one sensor and at least one electrical component.

[Claim 58] 58. The method of claim 53, wherein said detachable sealed housing is removably coupled to said component by a threaded connection.

[Claim 59] 59. The method of claim 53, wherein said detachable sealed housing is removably coupled to said component by a retaining clip.

[Claim 60] 60. The method of claim 53, further comprising a threaded retaining member that is threadingly coupled to said component, said threaded retaining member adapted to engage at least a portion of said detachable sealed housing to removably couple said detachable sealed housing to said component.

[Claim 61] 61. The method of claim 53, wherein removably coupling said detachable sealed housing to said component comprises positioning a cover plate over said detachable sealed housing, said cover plate being removably coupled to said component by at least one threaded fastener.

[Claim 62] 62. The method of claim 53, wherein said housing has a plurality of cavities formed therein.

[Claim 63] 63. The method of claim 53, wherein said recess is formed in an exterior surface of said component.

[Claim 64] 64. The method of claim 53, wherein said recess is formed in an interior surface of said component.

[Claim 65] 65. The method of claim 53, wherein said component comprises at least one of a drill bit, a pipe, a motor, a rotary steerable device, and a downhole sub.

[Claim 66] 66. The method of claim 53, further comprising withdrawing said detachable sealed housing from said wellbore and observing at least one indicator light operatively coupled to said detachable sealed housing.

[Claim 67] 67. The method of claim 53, further comprising withdrawing said detachable sealed housing from said wellbore and observing at least one display panel operatively coupled to said detachable sealed housing.

[Claim 68] 68. A method, comprising:
positioning a detachable sealed housing adjacent a surface of a component adapted to be positioned in a subterranean wellbore;
removably coupling a detachable sealed housing to said surface of said component, the housing having at least one cavity formed therein and at least one device positioned within said at least one cavity;
positioning said component and said detachable sealed housing in said subterranean wellbore; and
acquiring data using said at least one device after said detachable sealed housing is positioned within said subterranean wellbore.

[Claim 69] 69. The method of claim 68, wherein said at least one device is comprised of a sensor.

[Claim 70] 70. The method of claim 68, wherein said at least one device is comprised of an electrical component.

[Claim 71] 71. The method of claim 68, wherein said at least one device is comprised of at least one sensor and at least one electrical component.

[Claim 72] 72. The method of claim 68, wherein said detachable sealed housing is removably coupled to said surface of said component by at least one threaded fastener.

[Claim 73] 73. The method of claim 68, wherein said detachable sealed housing has a plurality of cavities formed therein.

[Claim 74] 74. The method of claim 68, wherein said detachable sealed housing is removably coupled to an exterior surface of said component.

[Claim 75] 75. The method of claim 68, wherein said detachable sealed housing is removably coupled to an interior surface of said component.

[Claim 76] 76. The method of claim 68, wherein said component comprises at least one of a drill bit, a pipe, a motor, a rotary steerable device, and a downhole sub.

[Claim 77] 77. The method of claim 68, further comprising withdrawing said detachable sealed housing from said wellbore and observing at least one indicator light operatively coupled to said detachable sealed housing.

[Claim 78] 78. The method of claim 68, further comprising withdrawing said detachable sealed housing from said wellbore and observing at least one display panel operatively coupled to said detachable sealed housing.